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limbs, and a momentary loss of consciousness, but did not fall.

He has now had no recurrence of convulsions, or other epileptic symptoms whatever, for a period of nearly six months. When he began working after his discharge from the hospital, he noticed, in trying to keep in mind the orders for deliveries to customers, that his memory was not so good as before the injury. He now follows the same occupation, and performs the same duties in it, as before he was shot. He feels perfectly well, and, by the test mentioned above, is sure that his memory is constantly growing more retentive.

### THE DEBATE ON VIVISECTION AT OXFORD.<sup>1</sup>

IN our last issue we gave a brief notice of the proceedings in an overflowing convocation at Oxford, which resulted in a majority of 412 votes to 244 in favor of the decree promulgated by the Hebdomadal council. This decree had only an indirect bearing upon the question of vivisection; but as it was made an occasion for a fresh, and, let us hope, a final, trial of strength between the scientific and anti-scientific forces of the university, it is desirable to furnish our readers with a somewhat more full account of what took place than we had time to print last week. Seeing that the debate had clearly been organized with no small amount of care on the side of the anti-vivisectionists, and that the ablest as well as the most authoritative speakers in Oxford who could support their cause were put forward, we may regard the arguments which were adduced as a fair example of the best that can be said against vivisection by cultured thought and cultured speech. We will therefore confine our remarks to what was said on this side of the question.

Regarded as a piece of oratory, the speech of Canon Liddon was, in our opinion, perfect; and the effect of what we may term an artistic eloquence was enhanced by the appearance and costume of the speaker, as well as by the appropriateness of his surroundings in the densely crowded Sheldonian theatre. But when we look from the manner to the matter of his speech, we are unable to bestow such unqualified praise, although we confess that even here we were agreeably surprised by the judicious moderation of its tone. His views, briefly stated, were, that so long as we hold it morally lawful to kill animals for food, or otherwise to use them for our own purposes, so long must we in consistency hold, that, under certain circumstances, it is morally lawful to inflict pain upon animals for the benefit of man. The special case of vivisection does not differ in principle from other cases where pain is thus inflicted; but it ought to be qualified by three conditions: it should be resorted to as rarely as possible, it should be guarded against the instinct of cruelty, and it should be so used as not to demoralize spectators. With

all this, every physiologist would of course agree. The canon, however, proceeded to talk what, in the strictest meaning of the word, must be termed nonsense, when he affirmed that physiology might be 'divorced' from vivisection. That this statement has gained currency among the anti-vivisectionists does not alter its essentially unreasonable character. It is perfectly true that in many departments of physiological research vivisection is not required; but it is no less true that in many other departments vivisection is an unconditional necessity. This fact, one would think, admits of being rendered obvious to any impartial mind, howsoever ignorant of physiological science; for, if this science consists in the study of vital processes going on in the living organism, does it not obviously follow that some of them can only be studied while actually taking place? How, for example, would it be possible to gain any knowledge of the electrical and other changes which occur in a gland during the process of secretion, except by estimating these changes during the act of secretion? The gratuitous information which physiologists receive from technically ignorant sources, touching the nature and the value of their own methods, can only suggest the presumption of inexperienced youth when venturing to instruct a maternal grandparent in the practical aspects of oölogy.

It appears that Professor Burdon-Sanderson had pledged himself not to exhibit vivisections to his class for the purposes of teaching, and for this concession to the unreasoning prejudice of his opponents he received a warm expression of gratitude from Canon Liddon. Probably enough, under the circumstances in which he is placed, the concession is a prudent one; but that it merited the eulogium which was bestowed upon it by Canon Liddon on moral grounds, no man of common sense could very well suppose. Demonstrations on the living subject, if performed in a class-room at Oxford, would of course be always performed on animals under the influence of anaesthetics; and therefore the 'demoralizing' effects upon the minds of young men, which Canon Liddon takes to have been averted by Professor Sanderson's concession, can only be understood to consist in disregarding the mawkish sentimentality which cannot stand the sight of a painless dissection. This kind of 'morality' may be regarded as tolerable in a girl: in a man it is not tolerable, and deserves the same kind of pitying contempt as is accorded to personal cowardice, with which it is most nearly allied.

Canon Liddon, however, regretted that Professor Sanderson had not further pledged himself to restrict his experiments *for the purposes of research* to animals kept under the influence of anaesthetics during the operations, and killed before recovering from their anaesthesia. We have no doubt that Professor Sanderson might have complied with the first of these suggestions without any serious detriment to his future researches; for, as a matter of fact, the cases in which anaesthetics interfere with the progress of an experiment, are, comparatively speaking, very rare indeed,

<sup>1</sup> From *Nature* of March 19.

except where the occurrence of pain forms a necessary part of the experiment; i.e., in certain researches on the functions of sensory nerves. But as all the functions of sensory nerves which require for their study the infliction of pain have already been worked out, physiology, as it now stands, does not demand the absence of anaesthetics, save in a very small percentage of operations: therefore, when pain is inflicted during an operation, it is due, as a rule, not to the exigencies of research, but to the indifference of the operator,—a fact which we think physiologists ought to be more insistent than they are in impressing upon the mind of the public.

Nevertheless, we feel persuaded that Professor Sanderson was perfectly right in not binding himself never to operate without anaesthetics: for by so doing he would have virtually conceded the principle that the suffering of an animal is too great a price at which to buy an advance of knowledge; and this, among other things, would have been to place a moral stigma upon some of the most valuable researches of the past. Besides, as was pointed out in the course of an able speech by Professor Dicey, it is not desirable that the *status* of a professor in the university should be regarded as beneath that of a gentleman; and, if it is supposed that Dr. Sanderson is not to be trusted in the latter capacity, he ought never to have been chosen to fill an Oxford chair. In short, as the representative of physiology in Oxford, Dr. Sanderson, by the nature and extent of his concession, has drawn a clear distinction between the importance of teaching and of research: he has consented to allow the teaching to suffer, if needs be; but he will not consent to yield an inch where the principles of research are concerned.

The other suggestion which was thrown out by Canon Liddon—namely, that a professor of physiology ought to pledge himself to kill every animal before it recovers from its anaesthesia—is, from every point of view, absurd. In the first place, the suggestion can only emanate from the uninformed supposition that the pain of a healing wound is considerable. But we know, from the experience of hospital practice, that even the most severe wounds are painless while healing, unless the process of healing is complicated by morbid conditions, which now admit of being wholly prevented by antiseptic methods. As a matter of fact, therefore, in our physiological laboratories, as in our surgical wards, there is at the present time but an extremely small amount of suffering to be found in connection with the healing of wounds; and no man of ordinary sense, who had ever seen the inside of either the one or the other, would have cared to make the suggestion which we are considering. But in the next place, even if this were not so, it would have been highly wrong in any professor of physiology to restrict himself to the performance of experiments the objects of which could be secured during the action of an anaesthetic. Certainly more than half the experiments which the physiologist has now to perform have reference to questions of after-effects, and this is especially the

case in experiments bearing upon the problems of pathology.

The speech of the bishop of Oxford was bad, both in logic and in taste. It was bad in logic, because, in arguing for the total suppression of physiological research in Oxford, he relied upon foreign practice for his evidence of cruelty. This was essentially illogical, because it fails to distinguish between two very different things; namely, the cruelty, if any, which attaches to vivisection *per se*, and the cruelty which arises from other sources. If the state of public feeling in some foreign countries is not so sensitive as it is in our own on the matter of inflicting pain upon the lower animals, it is obviously unfair to search through the continent for instances of cruelty in connection with physiological research, and then to adduce such instances as proof of cruelty necessarily attaching to physiological research at home. We might as well argue against the use of mules in England because these animals are badly treated in Spain. As we have already said, there are now but extremely few cases possible in which the occurrence of pain is necessary for the purposes of an experiment; and therefore the proof of pain having been inflicted in any one case constitutes proof, not of the pain-giving character of vivisection in general, but of the carelessness of some operator in particular. The cruelty must belong to the individual, not to the methods; and we are not aware that any charge of cruelty has hitherto been proved against an English physiologist.

The bishop of Oxford's speech was bad in taste, because he sought, missionary-wise, to tell some anecdote of horror, which the good sense of convocation prevented him from narrating, further than that the subject of his story was to have been 'An affectionate little dog.' But as he was not able to give any reference to the scene of his tragedy, after a prolonged battle with his audience upon this somewhat necessary proof of authenticity, he was obliged to give way. His taste was perhaps still more questionable, when, in the presence of Professor Sanderson and other working physiologists, he proceeded to adduce the favorite argument that the pursuit of experimental physiology exercises a baleful influence on the moral nature. That the argument is unsound, both in principle and in fact, we need not wait to show.

The speech of Professor Freeman was rendered wholly inaudible by a general uproar, which proceeded chiefly from the side which he rose to support. We were told that this was due to the memory of the effect which was produced by his speech on the occasion of the previous vote.

Upon the whole, we think that the debate was of no little service to the cause of physiology in Oxford; and, when we consider how largely the majority of votes has grown since the first of the three divisions, we are glad to congratulate the university upon having shown so emphatically, that, not less than her sister, she is able to withstand the assaults of the two great enemies of learning,—ignorance and fanaticism.